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THE AMERICAN MATHEMATICAL MONTHLY.

Entered at the Post-office at Springfield, Missouri, as Second-class Mail Matter.

VOL. IV.

NOVEMBER, 1897.

No. 11.

BIOGRAPHY.

VASILIEV.

BY GEORGE BRUCE HALSTED.

ALLEXANDER VASILIEVITCH VASILIEV was born August 24 (old style), 1853, at Kazan. His father, orientalist already academician, was then Professor of Chinese Literature at the University of Kazan. His mother was a daughter of Simonov, Professor of Astronomy in Lobachévski's time and his predecessor as Rector. In 1855 on the transference of the Oriental Faculty to St. Petersburg, Vasiliev's father removed thither. In 1870 Vasiliev finished the course of the fifth St. Petersburg gymnasium as gold-medalist.

The love for mathematics, awakened in the gymnasium, where in Class VI. he studied Sturm's Differential Calculus, carried him to the mathematical department of the University of St. Petersburg, which then boasted Somov and the great Chebishev (Tchébychev).

As result of his earnest studies for 1870-73 appears the work "On the separation of roots," crowned with a gold medal. In 1874 on his taking his first degree he was invited by the University of Kazan to begin there his teaching as Privat-docent. Though he had planned to continue his studies at Berlin, he accepts this invitation to his birthplace and begins in November, 1874.

His *Dissertatio pro venia legendi* was entitled "On the separation of the roots of simultaneous equations." In January 1875 he begins to lecture on Functiontheory, all his scholars being older than the professor.



ALEXANDER VASILIEVITCH VASILIEV.

His thesis for the Master's examination, taken in 1878, was "On singular solutions in connection with the new views on the problem of integration of differential equations of first order."

His Master's Dissertation, accepted in May 1880, he prepared abroad, spending the year 1879 in Berlin with Weierstrass and Kronecker, and in Paris with Hermite. His subject was "On the rational functions analogous to the double-periodic." Soon after he was made Docent in the University of Kazan. He spent the next summer in Germany, and wrote "The teaching of mathematics in Berlin and Leipzig Universities."

A question which had so long interested him was treated again in his Doctor's dissertation in 1884, "Theory of the separation of the roots of systems of simultaneous equations." Now chosen Professor Extraordinarius, he was made Professor Ordinarius in 1887.

In 1884 Vasiliev was made president of the physico-mathematical section of the Scientific Society of Kazan University. In 1891 this section changed itself into the independent "Physico-mathematic Society." The eight volumes of Proceedings of this section from 1880 to 1890 contain a series of important articles and criticisms by Vasiliev. Since 1883 he has been the authority on all Russian works in Analysis for the "Fortschritte der Mathematik." In the years 1880-89 Vasiliev was particularly active as member of the local assembly, the Zemstvo, in the government of Kazan. By his influence, the number of folk-schools increased in 1883-89 from 43 to 90, of scholars from 1692 to 3100. Thus his district, Svijaschsk, attained a first rank in all Russia by passing from one scholar for 920 inhabitants to one scholar for 28 inhabitants.

Since 1891 Vasiliev has edited the "Bulletin de la Société Physico-Mathématique de Kasan," which now exchanges with 110 learned publications. In the brilliantly successful celebration of the hundredth birthday of Lobachevski by this society, and the foundation of the Lobachevski Prizes, more than a thousand persons from all over the world took part as subscribers.

The position now held by Vasiliev in the Russian mathematical world may be judged from his being chosen by the Academy of Sciences to report on a great work offered in competition for the Buniakovski Prize. The book received the half prize, while Vasiliev's report is to be honored by insertion in the Transactions of the Academy and the award of the Buniakovski Medal.

The great International Congress of Mathematicians just born into permanent life at its wonderfully successful first meeting, in Zurich, and next to meet at Paris, owes its inception to Vasiliev, who pushed the idea into prominence in every country. It was on his initiative that I brought the matter up in the American Mathematical Society and obtained the signatures of all the members present at the Brooklyn meeting to an endorsement of the idea giving specific credit to Vasiliev as originator. At the actual congress he was most active. From him, Laisant, and G. Cantor emanated the three important resolutions constituting the three commissions of the Congress.

The many works of Vasiliev, being inaccessible because in Russian, will

not be enumerated, but the depth of his thinking and charm of his style may be judged from his great Address on Lobachévski, which it was my good fortune to give to the world in a *literal* translation, not a paraphrase. This translation was greeted by a tremendous outburst of enthusiasm in the mathematical world.

It must here suffice to give a few detached sentences from a mass of letters sent me. "I am astonished to find these researches of such deep philosophical import," writes Professor Daniels of the University of Vermont. "I have read it with intense interest," says Cajori. "This life and work of Lobachevski will be a grand inspiration to mathematicians," says Zerr. "I rejoice that you, 'in the midst of the virgin forests of Texas,' are able to do this work," says Professor Carman. "It will arouse a deeper enthusiasm for scientific achievement and widen the horizon of every reader. Surely no mathematician should miss this gem from farthest Russia," says Dr. L. E. Dickson. "By translating this most interesting Address, you have earned for yourself a title to the thanks of the mathematical world," says Dr. Paul Staeckel, since so well known in this very line. I sent this translation in 1894 to Professor Friedrich Engel of Leipzig, to whom I afterward offered for translation into German my translation of Lobachevski's largest work, "New principles of Geometry with complete theory of parallels." He issued the Address in 1895, saying in his *Nachwort*: "Ich habe die Wassiljefsche Rede nach dem Original uebersetzt, obwohl bereits eine englische Uebersetzung von G. B. Halsted (Austin, Texas, 1894) vorlag; es schien mir aber fuer einen Deutschen nicht passend, eine russische Schrift nach einer englischen Uebersetzung zu uebertragen. Selbstverständlich habe ich aber die Halstedsche Uebersetzung ueberall verglichen und bekenne gern, dass sie mir an manchen Stellen gute Dienste geleistet hat."

A French translation and an (incomplete) Spanish translation have since appeared.

This transcendently beautiful production, linking forever the name of Vasiliev with that of Lobachevski, wins both for author and object, the love of every reader.

A personal picture with scene at Kazan the ancient capital of the Tartars, must be reserved for a subsequent chapter: "A Visit to Vasiliev."

NEW AND OLD PROOFS OF THE PYTHAGOREAN THEOREM.

By BENJ. F. YANNEY, A. M., Mount Union College, Alliance, Ohio, and JAMES A. CALDERHEAD, B. Sc., Curry University, Pittsburg, Pennsylvania.

[Continued from October Number.]

LVIII. Fig. 29.

$ALMI$ is equivalent to $2IAC = 2BAE$ is equivalent to $ACDE$.

$BKML$ is equivalent to $BKNC$ is equivalent to $BCFH$.

$\therefore ABKI$ is equivalent to $ACDE + BCFH$.